

DESCRIPTIONS OF SIX NEW SPECIES OF *PLECTOPYLIS* FROM
TONKIN.

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PLATE IX.

A CONSIDERABLE number of shells belonging to the genus *Plectopylis* have been kindly placed in my hands by Colonel Messenger, of the French Colonial Infantry, who informs me they were all collected by him in different localities in the 4th Military Territory of Tonkin, the headquarters of which are at Lao-Kay on the Red River, on the borders of Tonkin and Yunnan. Some of these shells are of special interest from presenting evidence of what I consider to be hybrid origin. Hitherto I have found the armature of *Plectopylis* practically constant, only a slight amount of variation within well-defined and rather narrow limits having been observed; but in examining the armatures of the shells now under consideration I found that some appeared to form connecting links with each other; and this fact at first considerably puzzled me, until at length I was driven to the conclusion—the idea had long been present in my mind in connection with other genera—that some of these molluscs had been interbreeding, and thus had given rise to a number of individuals presenting some features common to both parents. Viewed in this light, their segregation into distinct forms, by the process of elimination of the hybrid forms, no longer presented any difficulty.

I am not aware that the subject of hybridity in molluscs has been seriously discussed. Judging by analogy of what is known in other animals and plants, it is not surprising that molluscs should at times intercross. The orthodox view hitherto has been to unite all extreme forms connected by intermediate links into one group, and to regard these groups as variable species. It certainly is an easy way of disposing of an intricate subject, but it appears to me to be more philosophic to look on these extreme forms as closely allied but distinct species, which in some cases happen to meet on common ground, and thus give rise to progeny deriving their characters through divergent lines of descent.

In adopting this view I do not think we meet with any insuperable difficulty, for it may safely be assumed that a close relationship exists between most of the known species from Tonkin, since they nearly all have one feature in common, i.e. the posterior parietal plate, which is always in these species curved and obliquely descending backwards, giving off a short posterior support from the upper extremity, and these features are constant, however much the other structures anterior to the plate in question, as well as the palatal barriers, may vary. This constancy extends to most of the known species from China, and it is only with the Burmese and Indian forms that the posterior parietal plate is of different character, and gives off horizontal plates and other structures.

PLECTOPYLIS MESSAGERI, n.sp. Pl. IX, Fig. 3.

Shell dextral, very widely umbilicated, discoid, light or dark corneous, finely and regularly ribbed above, becoming smoother below, decussated with very fine spirals. Spire depressed, apex prominent, suture rather deep. Whorls 7, increasing slowly and regularly, slightly convex above, rounded at the side, inflated below, angulated at the upper part of the last whorl, and obtusely subangular round the umbilicus; the last whorl dilated towards the mouth, shortly deflexed in front. Aperture elongate-elliptic, oblique, margins slightly convergent, united by a slightly raised flexuous callus on the parietal wall. Peristome thickened and considerably expanded, but slightly reflexed; upper margin arcuate, outer and basal rounded, columellar straight.

Parietal armature composed of two vertical plates, the anterior flexuous, its lower part receding and giving off posteriorly a longish, obliquely descending ridge, and with a slight support anteriorly at the upper extremity, above which occurs a short, free, horizontal fold. The posterior plate is curved, obliquely descending backwards, and with a short posterior ridge at the upper extremity.

Palatal armature consisting of six folds; the first nearly horizontal, low and thin, the next four oblique, semicircular, and flexuous, united by a vertical callus; the second ascending at first, then horizontal, the next three horizontal at first, then ascending; sixth oblique, semicircular, but short. Diam. maj. 18.5, min. 14.5 mm.; alt. 8 mm.

Hab.—Muong-Hum. Type in my collection.

Diam. maj. 16, min. 13 mm.; alt. 6.25 mm.

Hab.—Nat-Son, Pac-Kha, and Trinh-Tuong.

Var. *minor*.—Diam. maj. 12.75, min. 10.75 mm.; alt. 6 mm.

Hab.—Nat-Son.

This new species resembles *P. Moellendorffi*; but, although more elevated in the spire, the axis is relatively shorter, and the last whorl is much less deflexed, the aperture at the same time being more dilated laterally. In the parietal armature it differs in having the anterior vertical plate produced posteriorly below into a descending long ridge, which, with the anterior support of the upper extremity, gives this structure the form of the letter Z, while the free horizontal fold occurring below it in *P. Moellendorffi* is here absent. The palatal armature also exhibits some differences, notably in the second fold being in the new species much shorter, and having the four folds united by a transverse callus, a feature not observed in *P. Moellendorffi*.

A specimen from Pac-Kha shows traces of hybrid origin, for while it has the second palatal fold short, as in *P. Messageri*, the anterior parietal plate lacks the posterior long ridge below, and has instead a free horizontal fold as in *P. Moellendorffi*.

A number of shells from Gia-Phu are smaller than the type, measuring only 16 mm. in diameter; they have a relatively higher spire, and have the last whorl more deflexed in front. The species is named in honour of Colonel Messager, who has contributed so largely to our knowledge of the molluscan fauna of Tonkin.

PLECTOPYLIS VERECUNDA, n.sp. Pl. IX, Fig. 4.

Shell dextral, widely umbilicated, conoid, corneous, the nepionic whorls shining, almost smooth, the later ones finely and regularly ribbed, the riblets more pronounced above than below, covered with a thin deciduous cuticle. Spire a little elevated, apex obtuse, suture linear. Whorls 7, increasing slowly and regularly, flattened above, rounded at the side and below, subangulated above the periphery and round the moderately wide, deep umbilicus, slightly dilated towards the mouth, a little descending and abruptly deflexed in front. Aperture crescent-shaped, oblique, margins a little convergent; peristome white, slightly thickened and reflexed, margins united by a raised flexuous ridge, which emits a curved, entering, obliquely ascending fold; upper margin descending, outer basal and columellar regularly rounded.

Parietal armature composed of two vertical plates, the anterior straight, giving off a short ridge anteriorly at the upper extremity and another posteriorly at the lower extremity, giving that structure the form of the letter **L**; the posterior plate curved, descending backwards, with a short ridge posteriorly from its upper extremity.

Palatal armature consisting of six folds, the first and sixth smallest, nearly horizontal, low, the other four oblique, more elevated, second longest, ascending at first, then horizontal; third, fourth, and fifth horizontal at first, then ascending, the latter with a small denticle above its posterior extremity. Diam. maj. 13.5, min. 11.25 mm.; alt. 7 mm.

Hab.—Phony-Tho. Type in my collection.

Allied to the preceding species, but smaller, with a more conical spire, deeper umbilicus, and the mouth not dilated laterally, and furnished with an entering curved fold on the parietal wall.

In its armature it differs in lacking the free fold above the anterior parietal plate; and this plate is straighter, and gives off posteriorly at its lower extremity a much shorter ridge than in *P. Messageri*. It differs further in the four palatal folds not being united by a callous ridge, in the second fold being longer, and in having a denticle posteriorly to the fifth fold.

PLECTOPYLIS GOULDINGI, n.sp. Pl. IX, Fig. 1.

Shell dextral, widely umbilicated, discoid, corneous, finely ribbed, and decussated with fine spirals, and having, in addition, raised spiral ridges, probably furnished with hairs in the fresh state. Spire flat, apex low, suture a little impressed. Whorls 6, a little convex above, rounded at the side and below, subangulated above, increasing slowly and regularly, last scarcely dilated towards the mouth, slightly descending and deflexed in front. Aperture sub-ovate, oblique, margins distant, united by a strong raised flexuous ridge; peristome whitish, a little thickened and reflexed; upper margin arcuate, outer and basal curved, columellar straight.

Parietal armature composed of two vertical plates, the anterior straight, giving off at the upper extremity a long horizontal thin fold anteriorly and a short ridge posteriorly, while the lower extremity

has a short ridge on both sides ; below it occurs a moderately long, free, obliquely descending fold ; the posterior plate is curved and descends backwards, with a short support posteriorly at the upper extremity.

Palatal armature consisting of six folds, the first low, thin, straight, horizontal, the other five more raised ; the second very long, the anterior portion horizontal, the posterior portion vertically descending, with a slight denticle behind and a diffuse callus below its extremity, the next three curved, oblique, bifurcated posteriorly ; sixth oblique, straight, short. Diam. maj. 12, min. 10.5 mm. ; alt. 5 mm.

Hab.—Nat-Son. Type in my collection.

This new species is named in honour of Mr. Richard W. Goulding, the Librarian at Welbeck Abbey, who has frequently favoured me with advice and assistance. The shell is allied to *P. anterides*, but the anterior parietal plate is not provided with the buttresses so conspicuous a feature in that species, and the plate is united to the upper horizontal fold, which is much longer than in *P. anterides*, as is the lower free horizontal fold ; while the palatal folds are not united by a vertical callus and they overlap when viewed from the front, whereas in *P. anterides* they have much more space between.

A larger form from Pac-Kha, measuring 14 mm. in diameter, shows traces of hybrid origin, having the overlapping palatal folds of *P. Gouldingi* with the free upper horizontal parietal fold and the buttresses of *P. anterides*. A still larger form from the same place (16 mm.), while otherwise agreeing in both sets of armature, is provided with buttresses. The species is also allied to *P. tenuis*, but the anterior vertical parietal plate in that species has no support anteriorly at its lower extremity, and has a free fold above it, while its palatal folds are not bifurcate.

PLECTOPYLIS ANTERIDES, n.sp. Pl. IX, Fig. 2.

Shell dextral, widely umbilicated, discoid, from pale to ruddy corneous, the nepionic whorl shining, the later ones dull, covered with a deciduous cuticle. Spire flat, apex low, suture a little impressed. Whorls 6, slightly convex above, rounded at the side and below, obtusely angulated round the wide, rather shallow umbilicus, increasing slowly and regularly, last scarcely dilated towards the mouth, shortly and abruptly deflexed in front. Aperture subcircular, oblique, margins distant ; peristome white, thickened, and reflexed, the margins united by a strongly raised flexuous ridge ; upper margin at first slightly ascending, arcuate, outer and basal regularly curved, columellar straight.

Parietal armature composed of two vertical plates, the anterior giving off at its lower extremity a short ridge on each side, with one or two buttresses anteriorly, and having a free, horizontal, thin, longish fold above and below ; the posterior curved, descending backwards, with a short ridge posteriorly above.

Palatal armature composed of six folds, the first short, thin, low, horizontal, with a short descending ridge at its posterior extremity, the others raised ; the second long, its anterior portion horizontal, its posterior extremity descending and bifurcate ; the third has the

anterior extremity horizontal, then descends obliquely, and bifurcates posteriorly; fourth and fifth with the anterior extremity vertical, descending obliquely in a curve, bifurcating posteriorly; sixth short, oblique. Diam. maj. 11.5, min. 9.75 mm.; alt. 4.5 mm.

Hab.—Pac-Kha. Type in my collection.

Larger specimens from the same habitat measure 12 mm. in diameter, while others from Long-Ruy (1,500 metres altitude) measure 10.5 mm. in diameter. In addition to the differences already mentioned under *P. Gouldingi*; the first palatal fold has a descending short ridge at its posterior extremity, a feature absent in *P. Gouldingi*.

PLECTOPYLIS FALLAX, n.sp. Pl. IX, Fig. 6.

Shell resembling *P. Moellendorffi*, but the spire is quite flat, and the axis is relatively lower, the last whorl descends much more in front, the aperture is more oblique and more dilated laterally. The anterior parietal plate is shorter, leaving more space between it and the upper and lower free horizontal folds, and it gives off, in addition, an anterior and posterior ridge at the lower extremity; the upper free horizontal fold is also more produced; the four inner palatal folds have their posterior extremities also more horizontal than in *P. Moellendorffi*, showing a tendency to bifurcation. Diam. maj. 17, min. 14.5 mm.; alt. 6.25 mm.

Hab.—Muong-Bo.

More variable in size than *P. Moellendorffi*, the smallest specimen measuring 13.5 mm. in diameter.

Var. MAJOR.

This form has the aperture still more distended laterally, the margins of the peristome more expanded, the last whorl more deflexed in front, and the mouth more oblique. Diam. maj. 21, min. 17.5 mm.; alt. 8 mm.

Hab.—Pac-Kha.

At first I was inclined to consider *P. fallax* a variety of *P. Moellendorffi*, but, in addition to the deviations in the armature and other differences indicated above, the shell has such a distinct facies that it seems better to give it specific rank.

PLECTOPYLIS CYRTOCHILA, n.sp. Pl. IX, Fig. 5.

Shell dextral, widely umbilicated, discoid, translucent, pale corneous, smooth and polished especially below, finely irregularly striated. Spire depressed, apex obtuse, suture deep. Whorls $6\frac{1}{2}$, convex, increasing slowly and regularly, rounded at the periphery, subangulated round the wide, open, funnel-shaped umbilicus, last whorl slightly deflexed in front, and slightly constricted behind the mouth. Aperture roundly lunate, oblique, margins approaching; peristome whitish, a little thickened and slightly reflexed, the margins united by a slight callus on the parietal wall, regularly curved.

Parietal armature composed of two vertical plates, the anterior slightly descending forward and thickened below, with a short support on both sides of both extremities, those on the lower stout; the

posterior plate curved, obliquely descending backwards, with a short support posteriorly above.

Palatal armature consisting of six short and thin folds, the first five nearly horizontal, the sixth oblique, the first and sixth free, the other four united by a transverse ridge, which projects above the second fold curving forward, and below the fifth curving backwards, then shortly upwards. Diam. maj. 9.5, min. 8 mm.; alt. 4 mm.

Hab.—Muong-Kong. Type in my collection.

This species is allied to *P. Mansuyi*, but, although having half a whorl less, it is larger; it is also more depressed in the spire, is smoother, the last whorl is scarcely deflexed in front, the parietal ridge at the aperture is not raised and is without entering fold. *P. Mansuyi*, moreover, lacks the supports at both extremities of the anterior parietal plate, and the present species has the four inner palatal folds horizontal instead of oblique, and lacks the posterior row of denticles found in its ally.

EXPLANATION OF PLATE IX.

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| 1. | <i>Plectopylis Gouldingi</i> , n.sp., shell. |
| 1a. | ,, ,, parietal armature. |
| 1b. | ,, ,, palatal ,, |
| 2. | ,, <i>anterides</i> , n.sp., shell. |
| 2a. | ,, ,, parietal armature. |
| 2b. | ,, ,, palatal ,, |
| 3. | ,, <i>Messagevi</i> , n.sp., shell. |
| 3a. | ,, ,, parietal armature. |
| 3b. | ,, ,, palatal ,, |
| 4. | ,, <i>verecunda</i> , n.sp., shell. |
| 4a. | ,, ,, parietal armature. |
| 4b. | ,, ,, palatal ,, |
| 5. | ,, <i>cyrtochila</i> , n.sp., shell. |
| 5a. | ,, ,, parietal armature. |
| 5b. | ,, ,, palatal ,, |
| 6. | ,, <i>fallax</i> , n.sp., shell. |
| 6a. | ,, ,, parietal armature. |
| 6b. | ,, ,, palatal ,, |

N.B.—By an oversight the posterior parietal plate has been omitted in fig. 5a, while in fig. 5b the first palatal fold is shown erroneously as a denticle.